SHARP SERVICE MANUAL

No. S0801R27STPKS

MICROWAVE OVEN

MODEL R-27STM

In interests of user-safety the oven should be restored to its original condition and only parts identical to those specified should be used.

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SHARP CORPORATION

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The contents are subject to change without notice.

BEFORE SERVICING

GENERAL IMPORTANT INFORMATION

This Manual has been prepared to provide Sharp Corp. Service engineers with Operation and Service Information.

It is recommended that service engineers carefully study the entire text of this manual, so they will be qualified to render satisfactory customer service.

WARNING: THIS APPLIANCE MUST BE EARTHED

IMPORTANT

THE WIRES IN THIS MAINS LEAD ARE COLOURED IN ACCORDANCE WITH THE FOLLOWING CODE:

GREEN-AND-YELLOW---------- EARTH

BLUE ---------- NEUTRAL

BROWN----------LIVE

CAUTION MICROWAVE RADIATION

DO NOT BECOME EXPOSED TO RADIATION FROM THE MICROWAVE GENERATOR OR OTHER PARTS CONDUCTING MICROWAVE ENERGY.

Service engineers should not be exposed to the microwave energy which may radiate from the magnetron or other microwave generating devices if it is improperly used or connected. All input and output microwave connections, waveguides, flanges and gaskets must be secured. Never operate the device without a microwave energy absorbing load attached. Never look into an open waveguide or antenna while the device is energized.

WARNING

Never operate the oven until the following points are ensured.

(A) The door is tightly closed.

(B) The door brackets and hinges are not defective.

(C) The door packing is not damaged.

(D) The door is not deformed or warped.

(E) There is not any other visible damage with the oven.

Servicing and repair work must be carried out only by trained service engineers.

All the parts marked "Δ" on parts list are used at voltage more than 250V.

Removal of the outer wrap gives access to potential above 250V.

All the parts marked "*" on parts list may cause undue microwave exposure, by themselves, or when they are damaged, loosened or removed.

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WARNING TO SERVICE PERSONNEL

Microwave ovens contain circuitry capable of producing very high voltage and current, contact with any part of the high voltage circuit will result in electrocution. High voltage capacitor, Power transformer, Magnetron, High voltage rectifier assembly, High voltage fuse, High voltage harness.

REMEMBER TO CHECK **3D**

Disconnect the supply.

Door opened, and wedged open.

Discharge the high voltage capacitor.

WARNING: AGAINST THE CHARGE OF THE HIGH-VOLTAGE CAPACITOR

The high-voltage capacitor remains charged about 60 seconds after the oven has been switched off. Wait for 60 seconds and then short-circuit the connection of the high-voltage capacitor (that is, of the connecting lead of the high-voltage rectifier) against the chassis with the use of an insulated screwdriver.

Sharp recommend that wherever possible fault-finding is carried out with the supply disconnected. It may, in some cases, be necessary to connect the supply after the outer case has been removed, in this event carry out 3D checks and then disconnect the leads to the primary of the power transformer. Ensure that these leads remain isolated from other components and the oven chassis. (Use insulation tape if necessary.) When the testing is completed, carry out 3D checks and reconnect the leads to the primary of the power transformer.

REMEMBER TO CHECK **4R**

Reconnect all leads removed from components during testing.

Replace the outer case (cabinet).

Reconnect the supply.

Run the oven. Check all functions.

Microwave ovens should not be run empty. To test for the presence of microwave energy within a cavity, place a cup of cold water on the oven turntable, close the door and set the power level to HIGH (100%). And set the microwave timer for two (2) minutes. When the two minutes has elapsed (timer at zero) carefully check that the water is now hot. If the water remains cold, carry out 3D checks and re-examine the connections to the component being tested.

When all service work is completed and the oven is fully assembled, the microwave power output should be checked and microwave leakage test should be carried out.

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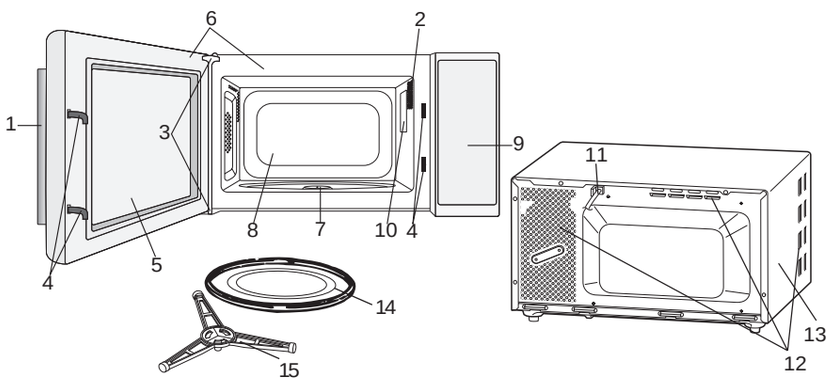
PRODUCT SPECIFICATIONS

ITEM	DESCRIPTION
Power Requirements	230 - 240 Volts 50 Hertz Single phase, 3 wire earthed
Power Consumption	1.22 kW
Power Output	800 watts nominal of RF microwave energy (IEC60705 Test Procedure) Operating frequency 2450 MHz
Outside Dimensions	Width 460 mm Height 275 mm including foot Depth 370 mm
Cooking Cavity Dimensions	Width 319 mm Height 215 mm Depth 336 mm **NOTE: Internal capacity is calculated by measuring maximum width, depth and height. Actual capacity for holding food is less.**
Turntable diameter	272 mm
Control Complement	Touch Control System Timer (0 - 99 minutes 90 seconds) Clock (1:00 - 12:59) or (0:00 - 23:59) Microwave Power for Variable Cooking Repetition Rate; 100P ..... Full power throughout the cooking time 70P .....approx. 70% of FULL Power 50P ..... approx. 50% of FULL Power 30P .....approx. 30% of FULL Power 10P .....approx. 10% of FULL Power EXPRESS COOK button EXPRESS DEFROST button POWER LEVEL button STOP/CLEAR button START/AUTO MINUTE button TIME/WEIGHT knob
Set Weight (Approx.)	12 kg

APPEARANCE VIEW

OVEN

1. Door opening handle
2. Oven lamp
3. Door hinges
4. Door safety latches
5. Door
6. Door seals and sealing surfaces
7. Coupling
9. Control panel
10. Waveguide cover
11. Power supply cord
12. Ventilation openings
13. Outer case cabinet
14. Turntable
15. Roller stay



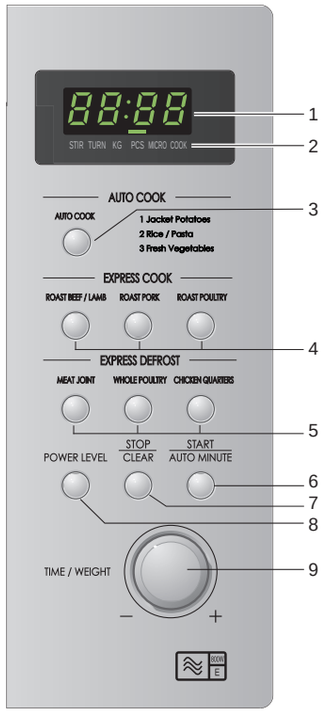
TOUCH CONTROL PANEL

1. DIGITAL DISPLAY
2. INDICATORS

BUTTONS:

3. AUTO COOK
4. EXPRESS COOK
5. EXPRESS DEFROST
6. START/AUTO MINUTE
7. STOP/CLEAR
8. POWER LEVEL
9. TIME/WEIGHT KNOB

NOTE: Some one-touch cooking features such as "START/AUTO MINUTE" are disabled after three minutes when the oven is not in use. These features are automatically enabled when the door is opened and closed or the STOP button is pressed.



OPERATION SEQUENCE

OFF CONDITION

Closing the door activates all door interlock switches (1st. latch switch, 2nd. interlock relay control switch).

IMPORTANT

When the oven door is closed, the monitor switch contacts (COM-NC) must be open.

When the microwave oven is plugged in a wall outlet, rated voltage is supplied to the noise filter and the control unit.

Figure O-1 on page 20

The display will show flashing "88:88".

To set any programmes or set the clock, you must first touch the STOP/CLEAR button.

" : " appears in the display.

MICROWAVE COOKING CONDITION

HIGH COOKING

Enter a desired cooking time by rotating the TIME/WEIGHT knob and start the oven with pressing START/AUTO MINUTE button.

Function sequence

Figure O-2 on page 20

CONNECTED COMPONENTS	RELAY
Oven lamp, Fan motor, Turntable motor	RY1
High voltage transformer	RY2

Rated voltage is supplied to the primary winding of the high voltage transformer. The voltage is converted to about 3.3 volts A.C. output on the filament winding and high voltage of approximately 2000 volts A.C. on the secondary winding

The filament winding voltage (3.3 volts) heats the magnetron filament and the high voltage (2000 volts) is sent to the voltage doubling circuit, where it is doubled to negative voltage of approximately 4000 volts D.C..

The 2450 MHz microwave energy produced in the magnetron generates a wave length of 12.24 cm. This energy is channelled through the waveguide (transport channel) into the oven cavity, where the food is placed to be cooked.

When the cooking time is up, a signal tone is heard and the relays (RY1+RY2) go back to their home position. The circuits to the oven lamp, high voltage transformer, fan motor and turntable motor are cut off.

When the door is opened during a cook cycle, the switches come to the following condition

SWITCH	CONTACT	CONDITION	
		DURING COOKING	DOOR OPEN (NO COOKING)
1st. latch switch	COM-NO	Closed	Open
2nd. interlock relay control switch	COM-NO	Closed	Open
Monitor switch	COM-NC	Open	Closed

The circuits to the high voltage transformer, fan motor, turntable motor and oven lamp are cut off when the 1st. latch switch and 2nd. interlock relay control switch are made open.

MONITOR SWITCH CIRCUIT

The monitor switch is mechanically controlled by oven door, and monitors the operation of the 1st. latch switch, the relay (RY1) and the 2nd. interlock relay (RY2).

When the oven door is opened during or after the cycle of a cooking program, the 1st. latch switch and 2nd. interlock relay control switch must open their contacts first. After that the contacts (COM-NC) of the monitor switch can be closed.

When the oven door is closed, the contacts (COM-NC) of the monitor switch must be opened. After that the contacts of the 1st. latch switch and 2nd. interlock relay control switch are closed.

When the oven door is opened and the contacts of the 1st. latch switch, the relay (RY1) and the 2nd. interlock relay (RY1) remain closed. The fuse T6.3A will blow, because the monitor switch is closed and a short circuit is caused.

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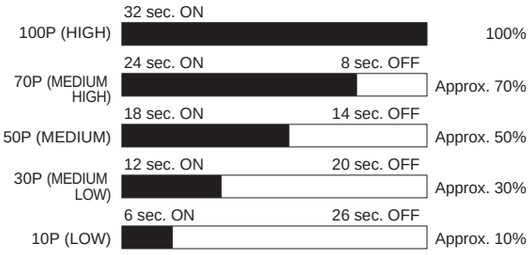
MEDIUM HIGH, MEDIUM, MEDIUM LOW, LOW COOKING

When the microwave oven is preset for variable cooking power, rated voltage is supplied to the high voltage transformer intermittently within a 32 second time base through the relay contact which is coupled with the current-limiting relay (RY2). The following levels of microwave power are given.

SETTING;

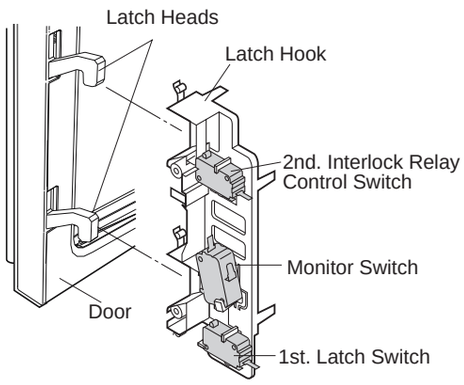


NOTE: The ON/OFF time ratio does not exactly correspond to the percentage of microwave power, because approx. 3 seconds are needed for heating up the magnetron filament.

POWER OUTPUT REDUCTION

After 100% power cooking mode is carried out for more than 20 minutes, the power out-put is automatically reduced to 70%. Even if the cooking time is shorter than for 20 minutes, the power output is reduced to 70% after total cooking time over 20 minutes when the oven is started in 100% power cooking mode again within 1 minute and 35 seconds.

FUNCTION OF IMPORTANT COMPONENTS



DOOR OPEN MECHANISM

The door is opened by pulling the door, refer to the Figure D-1.

Figure D-1. Door Open Mechanism

1ST. LATCH SWITCH AND 2ND. INTERLOCK RELAY CONTROL SWITCH

1. When the oven door is closed, the contacts (COM-NO) must be closed.
2. When the oven door is opened, the contacts (COM-NO) must be opened.

MONITOR SWITCH

1. When the oven door is closed, the contacts (COM-NC) must be opened.
2. When the oven door is opened, the contacts (COM-NC) must be closed.
3. If the oven door is opened and the contacts (COM-NO) of the 1st latch switch, the relay (RY1) and the 2nd. interlock relay (RY2) fail to open, the fuse T6.3A blows simultaneously with closing the contacts (COM-NC) of the monitor switch.

CAUTION: BEFORE REPLACING A FUSE T6.3A TEST THE 1ST. LATCH SWITCH, RELAY (RY1) AND 2ND. INTERLOCK RELAY (RY2) AND MONITOR SWITCH FOR PROPER OPERATION. (REFER TO CHAPTER "TEST PROCEDURE".)

FUSE T6.3A

1. The fuse T6.3A blows when the contacts (COM-NO) of the 1 st. latch switch, the relay (RY1) and the 2nd. interlock relay (RY2) remain closed with the oven door open and when the monitor switch closes.
2. If the wire harness or electrical components are short-circuited, the fuse T6.3A blows to prevent an electric shock of fire hazard.

HIGH VOLTAGE FUSE

The high voltage fuse blows when the high voltage rectifier or the magnetron is shorted.

TEMPERATURE FUSE 150°C (OVEN)

The temperature fuse located on the top of the oven cavity is designed to prevent damage to the oven if the foods in the oven catch fire due to over heating produced by improper setting of cook time or failure of control unit. Under normal operation, the temperature fuse remains closed. However, when abnormally high temperatures are reached within the oven cavity, the temperature fuse will open at 150°C, causing the oven to shut down. The defective temperature fuse must be replaced with a new one.

TURNTABLE MOTOR

The turntable motor drives the turntable roller assembly to rotate the turntable.

FAN MOTOR

The fan motor drives a blade which draws external cool air. This cool air is directed through the air vanes surrounding the magnetron and cools the magnetron. This air is channelled through the oven cavity to remove steam and vapours given off from the heating foods. It is then exhausted through the exhausting air vents at the oven cavity.

NOISE FILTER

The noise filter prevents the radio frequency interference that might flow back in the power circuit.

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TROUBLESHOOTING GUIDE

FOREWORD

When troubleshooting the microwave oven, it is helpful to follow the Sequence of Operation in performing the checks. Many of the possible causes of trouble will require that a specific test be performed. These tests are given a procedure letter which will be found in the "Test Procedure" section.

IMPORTANT:

If the oven becomes inoperative because of a blown fuse T6.3A in the 1st. latch switch - relay (RY1) - 2nd. interlock relay (RY2)- monitor switch circuit, check the 1st. latch switch, relay (RY1), 2nd. interlock relay (RY2) and monitor switch before replacing the fuse T6.3A.

CONDITION	PROBLEM \ TEST PROCEDURE	A	B	C	CK	D	E	E	E	F	G	G	H	K	M	M	N	RE	CK	CK	RE	CK	CK	CK	CK	CK	I	L	J
	POSSIBLE CAUSE AND DEFECTIVE PARTS	MAGNETRON	HIGH VOLTAGE TRANSFORMER	H.V. RECTIFIER ASSEMBLY	HIGH VOLTAGE WIRE	HIGH VOLTAGE CAPACITOR	1ST. LATCH SWITCH	2ND. INTERLOCK RELAY CONTROL SWITCH	MONITOR SWITCH	TEMPERATURE FUSE 150ºC (OVEN)	FAN MOTOR	TURNTABLE MOTOR	FUSE T6.3A	TOUCH CONTROL PANEL	RELAY (RY-1)	RELAY (RY-2)	FOIL PATERN ON P.W.B.	POWER SUPPLY CORD	SHORTED WIRE HARNESS	OPENED WIRE HARNESS	OVEN LAMP	WALL OUTLET	MISADJUSTMENT SWITCH	HOME FUSE OR BREAKER	BLOCKED COOLING FAN	BLOCKED VENTILATION	NOISE FILTER	SWITCH UNIT	H.V. FUSE
OFF CONDITION	Home fuse blows when powersupply cord is plugged into wall outlet.																	○	○					○					
	FUSE T6.3A blows when power supply cord is plugged into wall outlet.								○				○		○	○			○				○				○		
	"88:88" does not appear in display but power supply cord is plugged into wall outlet.									○			○	○			○	○		○		○		○			○		
	Display does not operate properly when STOP/CLEAR button is pressed.							○						○						○			○					○	
ON CONDITION	Oven does not start when the START button is touched. (Display appears)						○	○						○	○	○				○			○					○	
	Oven lamp does not light (Display appears.)													○	○					○	○								
	Fan motor does not operate. (Display appears.)										○				○					○					○				
	Turntable motor does not operate. (Display appears.)											○			○					○									
	Oven or any electrical parts does not stop when cooking time is 0 or STOP button is pressed.													○	○	○													
	Oven seems to be operating but little or no heat is produced in oven load. (Microwave power level is set at 100%)	○	○	○	○	○	○							○		○				○			○						○
	Oven does not seems to be operating properly when 70%,50%, 30% or 10% is set. (Oven operates properly at 100%.)													○		○													
	Oven goes into cook cycle but shuts down before end of cooking cycle.									○				○											○	○			

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TEST PROCEDURES

A: MAGNETRON TEST

NEVER TOUCH ANY PART IN THE CIRCUIT WITH YOUR HAND OR AN INSULATED TOOL WHILE THE OVEN IS IN OPERATION.

1. CARRY OUT **3D** CHECKS.
2. To test for an open filament, isolate the magnetron from the high voltage circuit. A continuity check across the magnetron filament leads should indicate less than 1 ohm.
3. To test for a shorted magnetron, connect the ohmmeter leads between the magnetron filament leads and chassis ground. This test should indicate an infinite resistance. If there is little or no resistance the magnetron is grounded and must be replaced.
4. Reconnect all leads removed from components during testing.
5. Reinstall the outer case (cabinet).
6. Reconnect the power supply cord after the outer case is installed.
7. Run the oven and check all functions.

MICROWAVE OUTPUT POWER

The following test procedure should be carried out with the microwave oven in a fully assembled condition (outer case fitted).

The power output of this oven is rated using the method specified by IEC 60705. Full details of how to curry out this procedure can be found in the Sharp Technical Training notes which is available from Sharp Parts Centre (part number SERV-LITMW01).

The IEC60705 procedure must be carried out using laboratory-type procedures and equipment.

These requirements make the procedure unsuitable for routine performance checks.

NOTE: The following test method gives an indication of the output power only, it cannot be used to establish the actual/rated output power. If the true output power is required, then the IEC 60705 test method must be used.

Alternative simplified method:

1. Place 2 litres of cold water (between 12ºC and 20ºC) in a suitable container.
2. Stir the water and measure the temperature in ºC. Note temperature as T1.
3. Place the container in the microwave and heat the water for 1 minute and 48 seconds on full power.

NOTE: The operation time of microwave oven includes "3" sec. (3 sec. is magnetron filament heat-up time.)

4. When the 1 minute and 48 seconds is completed, remove the container and stir the water. Note the water temperature as T2.
5. Calculate the output power using the following formula:

   R.F. Power Output = (T2 - T1) x 80.

NOTE: The result from this test should be within the allowance of 2000cc alternative method. (±10%).

MICROWAVE LEAKAGE TEST

This oven should be tested for microwave leakage on completion of any repair or adjustment, following the procedure described in the Sharp Technical Training notes (part number SERV-LITMW01). The maximum leakage permitted in BS EN 60335-2-25 is 50W/m^2 (equivalent to 5W/m^2), however it is not normal to detect any significant leakage, therefore, any leakage which is detected should be investigated.

It is essential that only leakage detectors with current calibration traceable to National Physical Laboratories are used.

Suitable leakage detectors: CELTEC A100

APOLLO X1

B: HIGH VOLTAGE TRANSFORMER TEST

WARNING: High voltage and large currents are present at the secondary winding and filament winding of the power transformer. It is very dangerous to work near this part when the oven is on. NEVER make any voltage measurements of the high-voltage circuits, including the magnetron filament.

1. CARRY OUT **3D** CHECKS.
2. Disconnect the leads to the primary winding of the high voltage transformer. Disconnect the filament and secondary winding connections from the rest of the HV circuitry. Using an ohmmeter, set on a low range, it is possible to check the continuity of all three winding. The following readings should be obtained:

   a. Primary winding - - - - - - - - - 2.8 ohms approximately

   b. Secondary winding - - - - - - - 204 ohms approximately

   c. Filament winding - - - - - - - - - - - - - - - less than 1 ohm

If the readings obtained are not stated as above, then the high voltage transformer is probably faulty and should be replaced.

3. Also, the high voltage transformer has the thermal cut-out in the primary coil. The thermal cut-out will open when the temperature of the thermal cut-out in the primary coil reaches approximately 150ºC. The thermal cut-out resets automatically at 130°C. If an ohmmeter indicates an open circuit under normal condition, replace the high voltage transformer because the primary coil (thermal cut-out) has opened. An open primary coil (thermal cut-out) indicates overheating of the high voltage transformer. Check for restricted air flow to the high voltage transformer, especially the ventilation opening.

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4. CARRY OUT **4R** CHECKS.

C: HIGH VOLTAGE RECTIFIER TEST

CARRY OUT **3D** CHECKS.

Isolate the high voltage rectifier assembly from the HV circuit. The high voltage rectifier can be tested using an ohmmeter set to its highest range. Connect the ohmmeter across the terminal of the high voltage rectifier and note the reading obtained. Reverse the meter leads and note this second reading. The normal resistance is infinite in one direction and more than 100 kW in the other direction.

CARRY OUT **4R** CHECKS.

NOTE:FOR MEASUREMENT OF THE RESISTANCE OF THE RECTIFIER, THE BATTERIES OF THE MEASURING INSTRUMENT MUST HAVE A VOLTAGE AT LEAST 6 VOLTS, BECAUSE OTHERWISE AN INFINITE RESISTANCE MIGHT BE SHOWN IN BOTH DIRECTION.

D: HIGH VOLTAGE CAPACITOR TEST

CARRY OUT **3D** CHECKS.

1. Isolate the high voltage capacitor from the circuit.
2. Continuity check must be carried out with measuring instrument which is set to the highest resistance range.
3. A normal capacitor shows continuity for a short time (kick) and then a resistance of about 10MW after it has been charged.
4. A short-circuited capacitor shows continuity all the time.
5. An open capacitor constantly shows a resistance about 10 MW because of its internal 10MW resistance.
6. When the internal wire is opened in the high voltage capacitor shows an infinite resistance.
7. The resistance across all the terminals and the chassis must be infinite when the capacitor is normal.

If incorrect reading are obtained, the high voltage capacitor must be replaced.

CARRY OUT **4R** CHECKS.

E: SWITCH TEST

CARRY OUT **3D** CHECKS.

Isolate the switch to be tested and using an ohmmeter check between the terminals as described in the following table.

Table: Terminal Connection of Switch

Plunger Operation	Common terminal to Normally open terminal	Common terminal to Normally close terminal
Released	Open circuit	Short circuit
Depressed	Short circuit	Open circuit.

If incorrect readings are obtained, make the necessary switch adjustment or replace the switch.

CARRY OUT **4R** CHECKS.

F: TEMPERATURE FUSE TEST

CARRY OUT **3D** CHECKS.

Disconnect the leads from the terminals of the temperature fuse. Then using an ohmmeter, make a continuity test across the two terminals as described in the below.

Table: Temperature Fuse Test

Parts Name	Temperature of "ON" condition (Closed circuit).	Temperature of "OFF" condition (Open circuit).	Indication of ohmmeter (When room temperature is approx. 20°C.)
Temperature fuse 150°C	This is not resetable type.	Above 150°C	Closed circuit

If incorrect readings are obtained, replace the temperature fuse.

An open circuit temperature fuse (OVEN) indicates that the food in the oven cavity may catch fire, this may be due to overheating produced by improper setting of the cooking time or failure of the control panel.

CARRY OUT **4R** CHECKS.

G: MOTOR WINDING TEST

CARRY OUT **3D** CHECKS.

Disconnect the leads from the motor. Using an ohmmeter, check the resistance between the two terminals as described in the table below.

Table: Resistance of Motor

Motors	Resistance
Fan motor	Approximately 250 W
Turntable motor	Approximately 14.7 kW

If incorrect readings are obtained, replace the motor. CARRY OUT **4R** CHECKS.

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H: FUSE T6.3A

CARRY OUT **3D** CHECKS.

If the fuse T6.3A is blown when the door is opened, check the 1st. latch switch, relay (RY1), 2nd. interlock relay (RY2) and monitor switch.

If the fuse T6.3A is blown by incorrect door switching replace the defective switch(es) and the fuse T6.3A.

If the fuse T6.3A is blown, there is a shorts or grounds in electrical parts or wire harness. Check them and replace the defective parts or repair the wire harness.

CARRY OUT **4R** CHECKS.

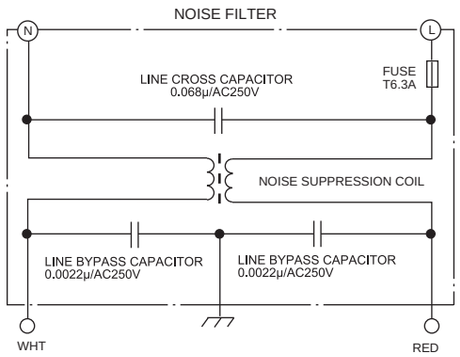
CAUTION: ONLY REPLACE FUSE T6.3A WITH THE CORRECT VALUE REPLACEMENT.

I: NOISE FILTER TEST

CARRY OUT **3D** CHECKS.

Disconnect the leads from the terminals of the noise filter. Using an ohmmeter, check between the terminals as described in the following table.

MEASURING POINT	INDICATION OF OHMMETER
Between N and L	Open circuit
Between terminal N and WHITE	Short circuit
Between terminal L and RED	Short circuit



If incorrect readings are obtained, replace the noise filter unit.

CARRY OUT **4R** CHECKS.

J: HIGH VOLTAGE FUSE TEST

CARRY OUT **3D** CHECKS.

If the high voltage fuse is blown, there could be a short in the high voltage rectifier or the magnetron.

Check them and replace the defective parts and the high voltage fuse.

CARRY OUT **4R** CHECKS.

CAUTION: ONLY REPLACE HIGH VOLTAGE FUSE WITH THE CORRECT VALUE REPLACEMENT.

K: TOUCH CONTROL PANEL ASSEMBLY TEST

The touch control panel consists of circuits including semiconductors such as LSI, ICs, etc. Therefore, unlike conventional microwave ovens, proper maintenance cannot be performed with only a voltmeter and ohmmeter. In this service manual, the touch control panel assembly is divided into two units, Control Unit and Switch Unit, and also the Control Unit is divided into two units, CPU Unit and Power Unit, and troubleshooting by unit replacement is described according to the symptoms indicated.

1. Switch Unit. **Note: Check switch unit wire harness connection before replacement.**

   The following symptoms indicate a defective switch unit. Replace the switch unit.

   a) When touching the buttons, a certain button produces no signal at all.
   b) When touching the buttons, sometimes a button produces no signal.
   c) When rotating the TIMER/WEIGHT knob, the cooking time or the weight can not be input.

2. Control Unit.

   The following symptoms indicate a defective control unit. Before replacing the switch unit, perform the Switch unit test (Procedure L) to determine if control unit is faulty.

2-1. In connection with buttons.

   a) When touching the buttons, a certain group of buttons do not produce a signal.
   b) When touching the buttons, no buttons produce a signal.

2-2. In connection with indicators.

   a) At a certain digit, all or some segments do not light up.
   b) At a certain digit, brightness is low.
   c) Only one indicator does not light up.
   d) The corresponding segments of all digits do not light up; or they continue to light up.
   e) Wrong figure appears.
   f) A certain group of indicators do not light up.
   g) The figure of all digits flicker.

3. Other possible troubles caused by defective control unit.

   a) Buzzer does not sound or continues to sound.
   b) Clock does not operate properly.
   c) Cooking is not possible.

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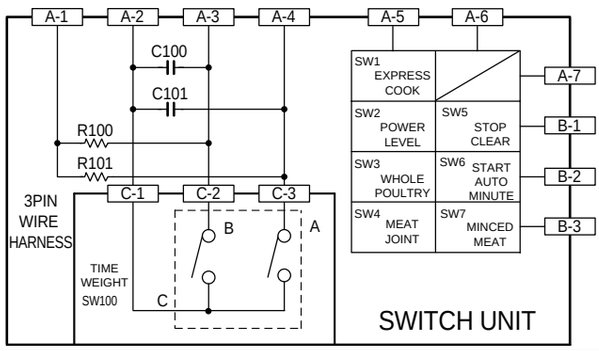
L: SWITCH UNIT TEST

1. CARRY OUT **3D** CHECKS.
2. Isolate the switch unit with the control panel frame to be tested.
3. Using an ohmmeter and referring to the switch unit matrix indicated on the switch unit circuit, check the circuit between the pins of the switch unit that correspond to the STOP button. When the button is pressed, the ohmmeter should indicate short circuit. When the button is released, the ohmmeter should indicate open circuit. If incorrect readings are obtained, the switch unit button is faulty and must be replaced. About the other buttons, the above method may be used.
4. CARRY OUT **4R** CHECKS.



M: RELAY TEST

CARRY OUT **3D** CHECKS.

Remove the outer case and check voltage between the upper side terminal of the relay RY1 and the oven side terminal of the relay RY2 on the control unit with an A.C. voltmeter. The meter should indicate 230 - 240 volts, if not check oven circuit.

RY1 and RY2 Relay Test

These relays are operated by D.C. voltage

Check voltage at the relay coil with a D.C. voltmeter during the microwave cooking operation.

DC. voltage indicated ..... Defective relay.

DC. voltage not indicated ..... Check diode which is connected to the relay coil. If diode is good, control unit is defective.

RELAY SYMBOL	OPERATIONAL VOLTAGE	CONNECTED COMPONENTS
RY1	Approx. 12.6V D.C.	Oven lamp / Turntable motor / Cooling fan motor
RY2	Approx. 12.1V D.C.	High voltage transformer

CARRY OUT **4R** CHECKS.

N: PROCEDURES TO BE TAKEN WHEN THE FOIL PATTERN ON THE PRINTED WIRING BOARD (PWB) IS OPEN

To protect the electronic circuits, this model is provided with a fine foil pattern added to the primary on the PWB, this foil pattern acts as a fuse. If the foil pattern is open, follow the troubleshooting guide given below for repair.

Problem: POWER ON, indicator does not light up.

CARRY OUT **3D** CHECKS.

STEPS	OCCURRENCE	CAUSE OR CORRECTION
1	The rated AC voltage is not present between the upper side terminal of the relay RY1 and the oven side terminal of the relay RY2.	Check supply voltage and oven power cord.
2	The rated AC voltage is present to primary side of low voltage transformer.	Low voltage transformer or secondary circuit defective. Check and repair.
3	Only pattern at "a" is broken.	*Insert jumper wire J1 and solder.
4	Pattern at "a" and "b" are broken.	*Insert the coil RCILF2003YAZZ between "c" and "d".

NOTE: *At the time of making these repairs, make a visual inspection of the varistor. Check for burned damage and examine the transformer with a tester for the presence of layer short-circuit (check the primary coil resistance). If any abnormal condition is detected, replace the defective parts.

CARRY OUT **4R** CHECKS.

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TOUCH CONTROL PANEL ASSEMBLY

OUTLINE OF TOUCH CONTROL PANEL

The touch control section consists of the following units as shown in the touch control panel circuit.

(1) Switch Unit

(2) Control Unit

The principal functions of these units and their related signals are explained below.

Switch Unit

The switch unit is composed of a matrix, signals generated in the LSI are sent to the switch unit through P22, P24, P25 and P26. When a button is pressed, a signal is completed through the switch unit and passed back to the LSI through P50 and P52 to perform the function that was requested. When the jog dial is rotated, the encoder converts the signal from the power source circuit into the pulse signal, and the pulse signal is sent to the LSI through P31 and P32.

Control Unit

Control unit consists of LSI, reset circuit, indicator circuit, power source circuit, relay circuit, buzzer circuit and synchronizing signal circuit.

1) Reset Circuit

   This circuit generates a signal which resets the LSI to the initial state when power is supplied.

2) Indicator Circuit

   This circuit consists of 4-digits, 12-segments and 3-common electrodes using a Liquid Crystal Display.

3) Power Source Circuit

   This circuit generates voltage necessary in the control unit from the AC line voltage. In addition, the synchronizing signal is available in order to compose a basic standard time in the clock circuit.

Symbol	Voltage	Application
VSS	-5V	LSI(IC1)

4) Relay Circuit

   To drive the magnetron, fan motor, turntable motor and light the oven lamp.

5) Buzzer Circuit

   The buzzer is responsive to signals from the LSI to emit audible sounds (switch unit touch sound and completion sound).

6) Synchronizing Signal Circuit

   The power source synchronizing signal is available in order to compose a basic standard time in the clock circuit. It accompanies a very small error because it works on commercial frequency.

7) 2nd. Interlock Relay Control Switch

   A switch to "tell" the LSI if the door is open or closed.

8) Back Light Circuit

   A circuit to drive the back light (Light emitting diodes LD1 - LD4).

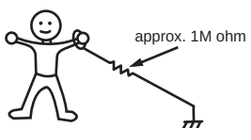
SERVICING FOR TOUCH CONTROL PANEL

1. Precautions for Handling Electronic Components

This unit uses CMOS LSI in the integral part of the circuits. When handling these parts, the following precautions should be strictly followed. CMOS LSI have extremely high impedance at its input and output terminals. For this reason, it is easily influenced by the surrounding high voltage power source, static electricity charge in clothes, etc., and sometimes it is not fully protected by the built-in protection circuit.

In order to protect CMOS LSI.

1) When storing and transporting, thoroughly wrap them in aluminium foil. Also wrap PW boards containing them in aluminium foil.
2) When soldering, ground the technician as shown in the figure and use grounded soldering iron and work table.



2. Servicing of Touch Control Panel

We describe the procedures to permit servicing of the touch control panel of the microwave oven and the precautions you must take when doing so. To perform the servicing, power to the touch control panel is available either from the power line of the oven itself or from an external power source.

1) Servicing the touch control panel with power supply of the oven:

CAUTION: THE HIGH VOLTAGE TRANSFORMER OF THE MICROWAVE OVEN IS STILL LIVE DURING SERVICING AND PRESENTS A HAZARD.

Therefore, before checking the performance of the touch control panel,

(1) Disconnect the power supply cord and then remove outer case.

(2) Open the door and block it open.

Discharge high voltage capacitor.

(3) Disconnect the leads to the primary of the power transformer.

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(4) Ensure that these leads remain isolated from other components and oven chassis by using insulation tape.

After that procedure, re-connect the power supply cord.

(1) After checking the performance of the touch control panel,

(2) Disconnect the power supply cord.

Open the door and block it open.

(3) Re-connect the leads to the primary of the power transformer.

(4) Re-install the outer case (cabinet).

Re-connect the power supply cord after the outer case is installed.

Run the oven and check all functions.

A On some models, the power supply cord between the touch control panel and the oven itself is so short that the two can't be separated. For those models, check and repair all the controls (sensor-related ones included) of the touch control panel while keeping it connected to the oven.

B On some models, the power supply cord between the touch control panel and the oven proper is so long enough that they may be separated from each other. For those models, therefore, it is possible to check and repair the controls of the touch control panel while keeping it apart from the oven proper; in this case you must short both ends of the door sensing switch (on PWB) of the touch control panel with a jumper, which brings about an operational state that is equivalent to the oven door being closed. As for the sensor-related controls of the touch control panel, checking them is possible if the dummy resistor(s) with resistance equal to that of the controls are used.

2) Servicing the touch control panel with power supply from an external power source:

Disconnect the touch control panel completely from the oven proper, and short both ends of the door sensing switch (on PWB) of the touch control panel, which brings about an operational state that is equivalent to the oven door being closed. Connect an external power source to the power input terminal of the touch control panel, then it is possible to check and repair the controls of the touch control panel; it is also possible to check the sensor-related controls of the touch control panel by using the dummy resistor(s).

3. Servicing Tools

Tools required to service the touch control panel assembly.

1) Soldering iron: 60W

(It is recommended to use a soldering iron with a grounding terminal.)

2) Oscilloscope: Single beam, frequency range: DC - 10MHz type or more advanced model.

3) Others: Hand tools

4. Other Precautions

1) Before turning on the power source of the control unit, remove the aluminium foil applied for preventing static electricity.

2) Connect the connector of the key unit to the control unit being sure that the lead wires are not twisted.

3) After aluminium foil is removed, be careful that abnormal voltage due to static electricity etc. is not applied to the input or output terminals.

4) Attach connectors, electrolytic capacitors, etc. to PWB, making sure that all connections are tight.

5) Be sure to use specified components where high precision is required.

PRECAUTIONS FOR USING LEAD-FREE SOLDER

1. Employing lead-free solder

The "Main PWB" of this model employs lead-free solder. This is indicated by the "LF" symbol printed on the PWB and in the service manual. The suffix letter indicates the alloy type of the solder.

Example:

Indicates lead-free solder of tin, silver and copper

2. Using lead-free wire solder

When repairing a PWB with the "LF" symbol, only lead-free solder should be used. (Using normal tin/lead alloy solder may result in cold soldered joints and damage to printed patterns.)

As the melting point of lead-free solder is approximately 40ºC higher than tin/lead alloy solder, it is recommend that a dedicated bit is used, and that the iron temperature is adjusted accordingly.

3. Soldering

As the melting point of lead-free solder (Sn-Ag-Cu) is higher and has poorer wettability, (flow), to prevent damage to the land of the PWB, extreme care should be taken not to leave the bit in contact with the PWB for an extended period of time. Remove the bit as soon as a good flow is achieved. The high content of tin in lead free solder will cause premature corrosion of the bit. To reduce wear on the bit, reduce the temperature or turn off the iron when it is not required.

Leaving different types of solder on the bit will cause contamination of the different alloys, which will alter their characteristics, making good soldering more difficult. It will be necessary to clean and replace bits more often when using lead-free solder. To reduce bit wear, care should be taken to clean the bit thoroughly after each use.

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COMPONENT REPLACEMENT AND ADJUSTMENT PROCEDURE

WARNING AGAINST HIGH VOLTAGE:

Microwave ovens contain circuitry capable of producing very high voltage and current, contact with following parts may result in severe, possibly fatal, electric shock.

(Example)

High Voltage Capacitor, High Voltage Transformer, Magnetron, High Voltage Rectifier Assembly, High Voltage fuse, High Voltage Harness etc..

WARNING: Avoid possible exposure to microwave energy. Please follow the instructions below before operating the oven.

1. Disconnect the power supply cord.
2. Visually check the door and cavity face plate for damage (dents, cracks, signs of arcing etc.).

Carry out any remedial work that is necessary before operating the oven.

Do not operate the oven if any of the following conditions exist;

1. Door does not close firmly.
2. Door hinge, support or latch hook is damaged.
3. The door gasket or seal is damaged.
4. The door is bent or warped.
5. There are defective parts in the door interlock system.
6. There are defective parts in the microwave generating and transmission assembly.
7. There is visible damage to the oven.

Do not operate the oven:

1. Without the RF gasket (Magnetron).
2. If the wave guide or oven cavity are not intact.
3. If the door is not closed.
4. If the outer case (cabinet) is not fitted.

WARNING FOR WIRING

To prevent an electric shock, take the following manners.

1. Before wiring,
   1) Disconnect the power supply cord.
   2) Open the door and block it open.
   3) Discharge the high voltage capacitor and wait for 60 seconds.
1. Don't let the wire leads touch to the following parts;
   1) High voltage parts:

      Magnetron, High voltage transformer, High voltage capacitor, High voltage rectifier assembly and High voltage fuse.
   2) Hot parts:

      Oven lamp, Magnetron, High voltage transformer and Oven cavity.
   3) Sharp edge:

      Bottom plate, Oven cavity, Waveguide flange and other metallic plate.
   4) Movable parts (to prevent a fault)

      Fan blade, Fan motor, Turntable motor and Switch.
1. Do not catch the wire leads in the outer case cabinet.
2. Insert the positive lock connector certainly until its pin is locked and make sure that the wire leads do not come off even if the wire leads are pulled.
3. To prevent an error function, connect the wire leads correctly, referring to the Pictorial Diagram.

Please refer to `OVEN PARTS, CABINET PARTS, CONTROL PANEL PARTS, DOOR PARTS', when carrying out any of the following removal procedures:

REMEMBER TO CHECK 3D

1) Disconnect the supply.
2) Door opened, and wedged open.
3) Discharge high voltage capacitor.

OUTER CASE REMOVAL

To remove the outer case, procedure as follows.

1. Disconnect the oven from power supply.
2. Open the oven door and wedge it open.
3. Remove the two (2) screws from right side of the outer case cabinet.
4. Remove the five (5) screws from rear and along the side edge of case.
5. Slide the entire case back about 3cm to free it from retaining clips on the cavity face plate.
6. Lift the entire case from the oven.
7. Discharge the H. V. capacitor before carrying out any further work.
8. Do not operate the oven with the outer case removed.

NOTE: Step 1, 2 and 7 form the basis of the 3D checks.

CAUTION: DISCONNECT OVEN FROM POWER SUPPLY BEFORE REMOVING OUTER CASE.

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HIGH VOLTAGE TRANSFORMER REMOVAL

1. CARRY OUT **3D** CHECKS.
2. Disconnect the wire leads (main wire harness and H. V. fuse) from high voltage transformer.
3. Disconnect the filament lead of high voltage transformer from the magnetron.
4. Disconnect the filament lead of the high voltage transformer from high voltage capacitor.
5. Remove the two (2) screws holding the transformer to bottom plate from below.
6. Remove the two (2) screws holding the transformer to bottom plate from above.
7. Remove the transformer.

HIGH VOLTAGE RECTIFIER ASSEMBLY, HIGH VOLTAGE FUSE AND HIGH VOLTAGE CAPACITOR REMOVAL

To remove the components, proceed as follows.

1. CARRY OUT **3D** CHECKS.
2. Disconnect the H. V. fuse from the high voltage transformer.
3. Disconnect the H. V. wire of the H. V. rectifier assembly from the magnetron.
4. Disconnect the filament lead of the high voltage transformer from the H. V. capacitor.
5. Remove one (1) screw holding capacitor holder to the oven cavity back plate.
6. Remove one (1) screw holding earth side terminal of high voltage rectifier assembly, and remove capacitor holder.
7. Disconnect all the leads and terminals of high voltage rectifier assembly from high voltage capacitor.
8. Disconnect the H. V. fuse from the high voltage capacitor.
9. Now H. V. rectifier assembly, H. V. fuse and H. V. capacitor should be free.

CAUTION: WHEN REPLACING HIGH VOLTAGE RECTIFIER ASSEMBLY, ENSURE THAT THE CATHODE (EARTH) CONNECTION IS SECURELY FIXED TO THE CAPACITOR HOLDER WITH AN EARTHING SCREW.

CAUTION: DO NOT REPLACE ONLY HIGH VOLTAGE RECTIFIER. WHEN REPLACING IT, REPLACE HIGH VOLTAGE RECTIFIER ASSEMBLY.

MAGNETRON REMOVAL

REMOVAL

1. CARRY OUT **3D** CHECKS.
2. Disconnect the wire leads from the magnetron.
3. Remove the two (2) screws holding the air duct to the oven cavity.
4. Release the air duct from the oven cavity.
5. Carefully remove the four (4) screws holding the magnetron to the waveguide flange.
6. Lift up magnetron with care so that the magnetron antenna is not hit by any metal object around antenna.
7. Now, the magnetron is free.

REINSTALLATION

1. Reinstall the magnetron to the waveguide flange with the four (4) screws.
2. Reinstall the air duct to the oven cavity with the two (2) screws.
3. Reconnect the wire leads to the magnetron. Refer to "PICTORIAL DIAGRAM".
4. Reinstall the outer case and check that the oven is operating properly.

CAUTION: WHEN REPLACING THE MAGNETRON, BE SURE THE R. F. GASKET IS IN PLACE AND THE MAGNETRON MOUNTING SCREWS ARE TIGHTENED SECURELY.

POSITIVE LOCK CONNECTOR (NO-CASE TYPE) REMOVAL

1. CARRY OUT **3D** CHECKS.
2. Push the lever of positive lock, connector.
3. Pull down on the positive lock, connector.

CAUTION: WHEN CONNECTING THE POSITIVE LOCK, CONNECTORS TO THE TERMINALS, CONNECT THE POSITIVE LOCK, SO THAT THE LEVER FACES YOU.

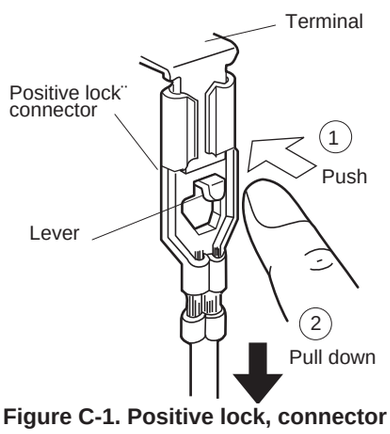

Figure C-1. Positive lock, connector

TURNTABLE MOTOR REMOVAL

REMOVAL

1. Disconnect the power supply cord.
2. Remove turntable and turntable support from oven cavity.
3. Lay the oven on it's backside. Remove the turntable motor cover by snipping off the material in four corners.
4. Where the corners have been snipped off bend corner areas flat. No sharp edges must be evident after removal of the turntable motor cover.
5. Disconnect wire leads from turntable motor. (See "Positive lock connector removal")

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6. Remove one (1) screw holding turntable motor to oven cavity.
7. Remove the TTM packing from the turntable motor.
8. Now, the turntable motor is free.

REINSTALL

1. Re-install the TTM packing to the turntable motor.
2. Re-install the turntable motor with the TTM packing with the single (1) screw to the oven cavity bottom plate.
3. Re-connect the wire leads to the turntable motor.
4. Insert the tab of the turntable motor cover into the hole of the bottom plate.
5. Re-install the turntable motor cover to the bottom plate with one (1) screw.

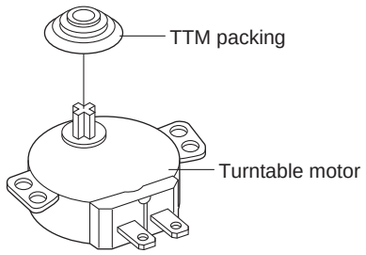


Figure C-2. TTM packing Installation

COOLING FAN MOTOR REMOVAL

REMOVAL

1. CARRY OUT **3D** CHECKS.
2. Disconnect the wire leads from the fan motor.
3. Remove the two (2) screws holding the fan motor to the oven cavity back plate.
4. Remove the fan blade from the fan motor shaft according to the following procedure.
5. Hold the edge of the rotor of the fan motor by using a pair of groove joint pliers.

CAUTION: MAKE SURE THAT ANY PIECES DO NOT ENTER THE GAP BETWEEN THE ROTOR AND THE STATOR OF THE FAN MOTOR. BECAUSE THE ROTOR IS EASY TO BE SHAVEN BY PLIERS AND METAL PIECES MAY BE PRODUCED.

DO NOT TOUCH THE PLIERS TO THE COIL OF THE FAN MOTOR BECAUSE THE COIL MAY BE CUT OR INJURED.

DO NOT DISFIGURE THE BRACKET BY TOUCHING WITH THE PLIERS.

6. Remove the fan blade from the shaft of the fan motor by pulling and rotating the fan blade with your hand.
7. Now, the fan blade will be free.

CAUTION: DO NOT RE-USE THE REMOVED FAN BLADE BECAUSE THE HOLE (FOR SHAFT) MAY BE LARGER THAN NORMAL.

8. Now, the fan motor is free.

INSTALLATION

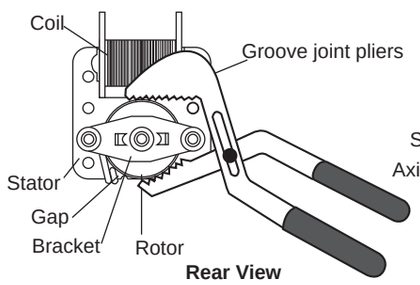
1. Install the fan blade to the fan motor shaft according to the following procedure.
2. Hold the centre of the bracket which supports the shaft of the fan motor on the flat table.
3. Apply the screw lock tight into the hole (for shaft) of the fan blade.
4. Install the fan blade to the shaft of fan motor by pushing the fan blade with a small, light weight, ball peen hammer or rubber mallet.

CAUTION: DO NOT HIT THE FAN BLADE STRONGLY WHEN INSTALLED BECAUSE THE BRACKET MAY BE TRANSFORMED.

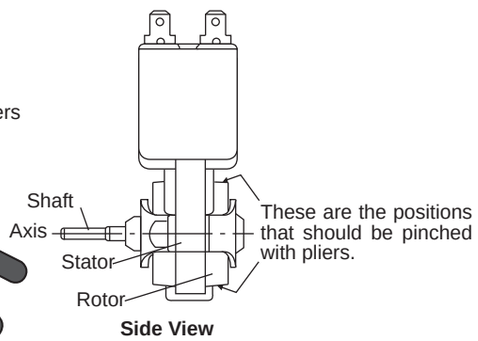
MAKE SURE THAT THE FAN BLADE ROTATES SMOOTH AFTER INSTALLED.

MAKE SURE THAT THE AXIS OF THE SHAFT IS NOT SLANTED.

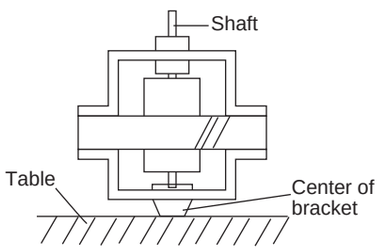
5. Install the fan motor assembly to the oven cavity back plate with two (2) screws.
6. Connect the wire leads to the magnetron and fan motor, referring to the pictorial diagram.



Rear View



Side View



POWER SUPPLY CORD REPLACEMENT

REMOVAL

1. CARRY OUT **3D** CHECKS.
2. Remove the single (1) screw holding the green/yellow wire to the oven cavity back plate.
3. Disconnect the leads of the power supply cord from the noise filter, referring to the Figure C-3(a).
4. Release the moulding cord stopper of the power supply cord from
5. the square hole of the oven cavity back plate, referring to the Figure C-3 (b).
6. Now, the power supply cord is free.

REINSTALL

1. Insert the moulding cord stopper of power supply cord into the square hole of the rear cabinet, referring to the Figure C-3 (b).
2. Install the earth wire lead of power supply cord to the oven cavity back plate with one (1) screw and tight the screw.
3. Connect the brown and blue wire leads of power supply cord to the noise filter correctly, referring to the Pictorial Diagram.

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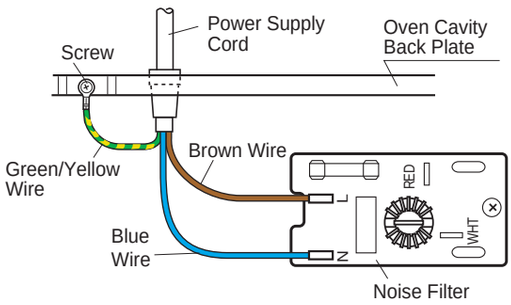

Figure C-3(a) Power Supply Cord Replacement

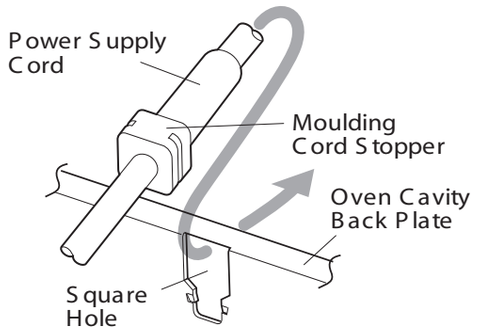

Figure C-3(b) Power Supply Cord Replacement

CONTROL PANEL ASSEMBLY REMOVAL

CARRY OUT **3D** CHECKS.

1. Disconnect the leads from the control unit.
2. Remove the one (1) screw holding the control panel to the front panel of the oven cavity.
3. Lift up the control panel assembly and release it from the oven cavity.
4. Now, the control panel assembly is free.

1ST. LATCH SWITCH, 2ND. INTERLOCK RELAY CONTROL SWITCH AND MONITOR SWITCH REPLACEMENT

REMOVAL

1. CARRY OUT 3D CHECKS.
2. Remove the control panel assembly, referring to section of CONTROL PANEL ASSEMBLY REMOVAL.
3. Disconnect wire leads from the switches.
4. Remove two (2) screws holding latch hook to oven flange.
5. Remove latch hook assembly from oven flange.
6. Push outward on the two (2) retaining tabs holding switch in place.
7. Switch is now free.

REINSTALL

1. Re-install each switch in its place. The 1st. latch switch and the monitor switch are in the lower position and the 2nd. interlock relay control switch is in the upper position
2. Secure latch hook (with two (2) mounting screws) to oven flange.
3. Re-connect wire leads to each switch. Refer to pictorial diagram.
4. Reinstall the control panel assembly to the oven cavity.
5. Reconnect wire leads to the control unit, referring to the pictorial diagram.
6. Make sure that the monitor switch is operating properly and check continuity of the monitor circuit. Refer to chapter "Test Procedure" and Adjustment procedure.

1ST. LATCH SWITCH, 2ND. INTERLOCK RELAY CONTROL SWITCH AND MONITOR SWITCH ADJUSTMENT

1. CARRY OUT **3D** CHECKS.
2. If the 1st. latch switch, 2nd. interlock relay control switch and monitor switch do not operate properly due to a misadjustment, the following adjustment should be made.
3. Loosen the two (2) screws holding latch hook to the oven cavity front flange.
4. With door closed, adjust latch hook by moving it back and forth, and up and down. In and out play of the door allowed by the upper and lower position of the latch hook should be less than 0.5mm. The vertical position of the latch hook should be adjusted so that the 1st. latch switch and 2nd. interlock relay control switch are activated with the door closed. The horizontal position of the latch hook should be adjusted so that the plunger of the monitor switch is pressed with the door closed.
5. Secure the screws with washers firmly.
6. Check the operation of all switches. If each switch has not activated with the door closed, loosen screw and adjust the latch hook position.

After adjustment, check the following.

1. In and out play of door remains less than 0.5mm when in the latched position. First check upper position of latch hook, pushing and pulling upper portion of door toward the oven face. Then check lower portion of the latch hook, pushing and pulling lower portion of the door toward the oven face. Both results (play in the door) should be less than 0.5mm.
2. When the door is open, the contacts of the 1st. latch switch and 2nd. interlock relay control switch open within 1.6mm gap between right side of cavity face and the door.
3. Monitor switch contacts close when door is opened.
4. Re-install outer case and check for microwave leakage around door with an approved microwave survey meter. (Refer to Microwave Measurement Procedure.)

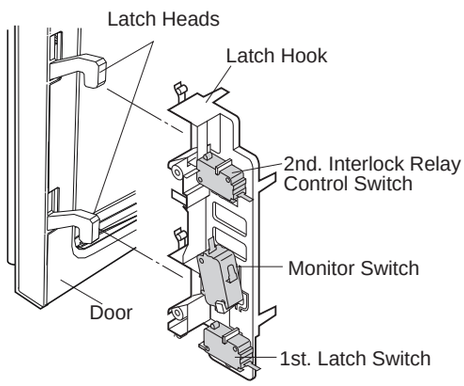

Figure C-5. Latch Switch Adjustments

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DOOR REPLACEMENT

REMOVAL

1. Disconnect the power supply cord.
2. Open the door slightly.
3. Insert a putty knife (thickness of about 0.5mm) into the gap between the choke cover and corner portion of door panel as shown in Figure C-6 to free engaging parts.
4. Pry the choke cover by inserting a putty knife as shown Figure C-6.
5. Release choke cover from door panel.
6. Now choke cover is free.

NOTE: When carrying out any repair to the door, do not bend or warp the slit choke (tabs on the door panel assembly) to prevent microwave leakage.

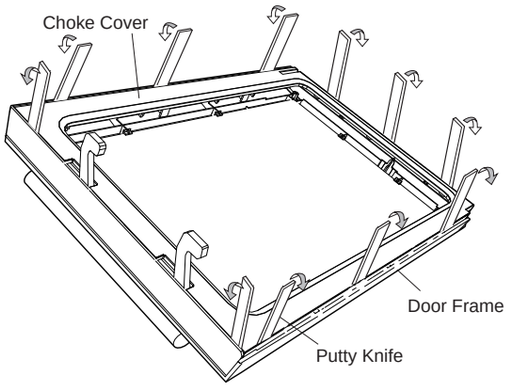

Figure C-6. Door Disassembly

7. Release two (2) pins of door panel from two (2) holes of upper and lower oven hinges by lifting up.
8. Now, door panel with door frame is free from oven cavity.
9. Release door panel from ten (10) tabs of door frame and remove the door frame by sliding the door panel downward.
10. Now, door panel with sealer film is free.
11. Tear sealer film from door panel.
12. Now, door panel is free.
13. Slide latch head upward and remove it from door frame with releasing latch spring from door frame and latch head.
14. Now, latch head and latch spring are free.
15. Remove the two (2) screws holding the door handle and the glass stopper to the door frame.
16. Remove the door handle and the glass stopper from the door frame.
17. Slide the door glass towards the door glass stopper position and then down towards the lower edge of the door frame.
18. Lift the upper edge of the door glass, which will now be free from the upper clips and remove from lower clips.
19. Now, door glass is free.

REINSTALLATION

1. Insert door glass into the door frame by reversing the above door glass removing procedure.
2. Re-install the glass stopper and the door handle to the door frame with the two (2) screws.
3. Re-install latch spring to the head. Re-install latch spring to the door frame. Re-install latch head to the door frame.
4. Re-install door panel to door frame by fitting ten (10) tabs of door frame to ten (10) holes of door panel.
5. Put sealer film on door panel. Refer to "Sealer Film" about how to handle new one.
6. Catch two (2) pins of door panel on two (2) hole of upper and lower oven hinges
7. Re-install choke cover to door panel by pushing.

NOTE: After any service to the door;

Make sure that 1st. latch switch, 2nd. interlock relay control switch and monitor switch are operating properly. (Refer to chapter "Test Procedures".).

An approved microwave survey meter should be used to assure compliance with proper microwave radiation emission limitation standards.

After any service, make sure of the following:

1. Door latch heads smoothly catch latch hook through latch holes and that latch head goes through centre of latch hole.
2. Deviation of door alignment from horizontal line of cavity face plate is to be less than 1.0mm.
3. Door is positioned with its face pressed toward cavity face plate.
4. Check for microwave leakage around door with an approved microwave survey meter. (Refer to Microwave Measurement Procedure).

NOTE: The door on a microwave oven is designed to act as an electronic seal preventing the leakage of microwave energy from oven cavity during cook cycle. This function does not require that door be air-tight, moisture (condensation) tight or light-tight. Therefore, occasional appearance of moisture, light or sensing of gentle warm air movement around oven door is not abnormal and do not of themselves, indicate a leakage of microwave energy from oven cavity.

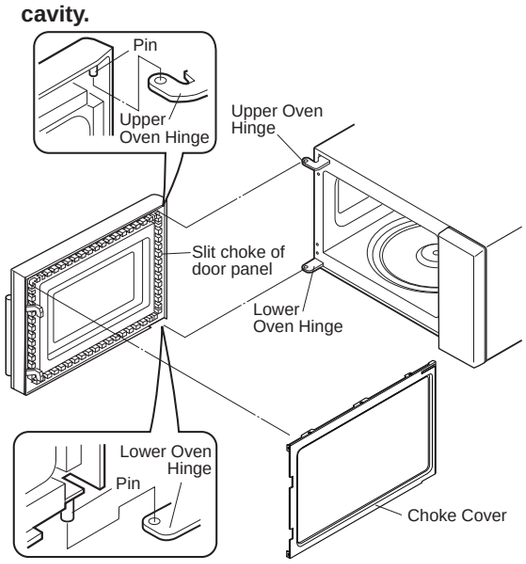

Figure C-7. Door Replacement

SEALER FILM

Put the adhesive tape on the backing film of the sealer film as shown in Fig. C-8

Tear the backing film by pulling the adhesive tape.

Put the pasted side of the sealer film on the door panel

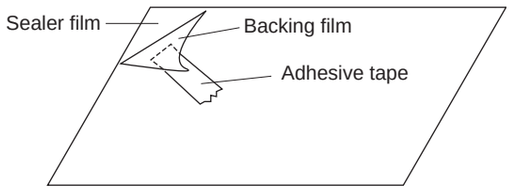

Figure C-8. Sealer film

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MICROWAVE MEASUREMENT

After any repair, the microwave oven must be checked for microwave leakage to ensure continued safe operation. BS EN 60335-2-25 specifies that the maximum permitted leakage with a load of 275 ml is 50 W/m^2 (equivalent to 5 mW/cm^2) at a distance of 5 cm from the oven.

PREPARATION

The following items are required to carry out this test:

1. A low form of 600 ml beaker made from an electrically non-conductive material, such as glass or plastic, with an inside diameter of approximately 8.5 cm. This must contain 275 ± 15 ml of water, at an initial temperature of 20 ± 2ºC.
2. A leakage detector which has been calibrated within the preceding 12 months to a stand whose accuracy can be traced to National Physical Laboratory Standards.

Recommended instruments are:-

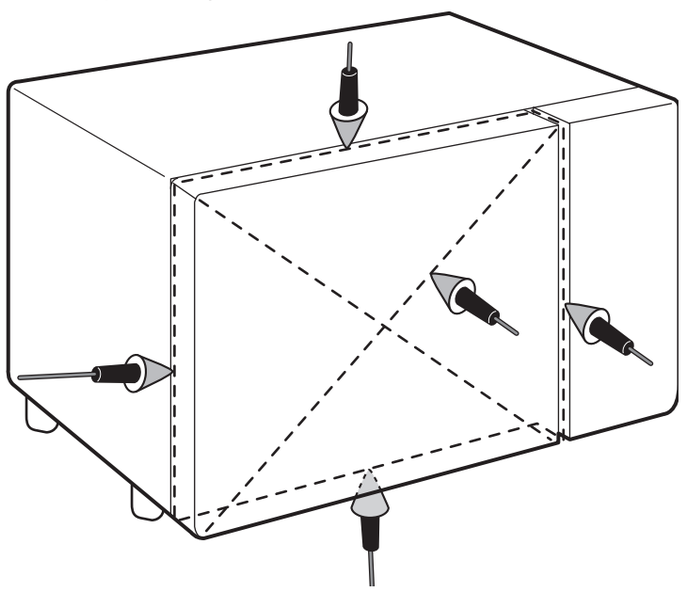
Apollo "XI"

Celtec "A100"

Before commencing the test, check that the leakage detector is functioning and adjusted according to the manufacturer's instructions, and any spacers are fitted to ensure that measurement is taken 5cm from the surface of the oven.

PROCEDURE

1. Place the beaker containing the water load in the oven cavity at the centre of the turntable. The placing of this standard load in the oven is important, not only to protect the oven, but also to ensure that any leakage it is not disguised by too large a load absorbing energy.
2. Close the oven door, and with the power level set to FULL, turn the oven ON with the timer set for a few minutes operation. Should the water begin to boil before the test has been completed, it should be replaced.
3. As shown in the diagram below, move the probe slowly (not faster than 2.5 cm/sec.);-
   1) around the edge of the door following the gap
   2) across the face of the door
   3) across any vents in the oven's sides, rear or top



Dotted line indicates the path taken by the leakage detector.

Whilst the maximum leakage permitted in BS EN 60335-2-25 is 50 W/m^2 (equivalent to 5 mW/cm^2), it is not normal to detect any significant leakage, and therefore any detected leakage should be investigated.

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CIRCUIT DIAGRAMS

Oven Schematic

SCHEMATIC
NOTE: CONDITION OF OVEN
1. DOOR CLOSED.

NOTE: "★" indicates components with potentials above 250V

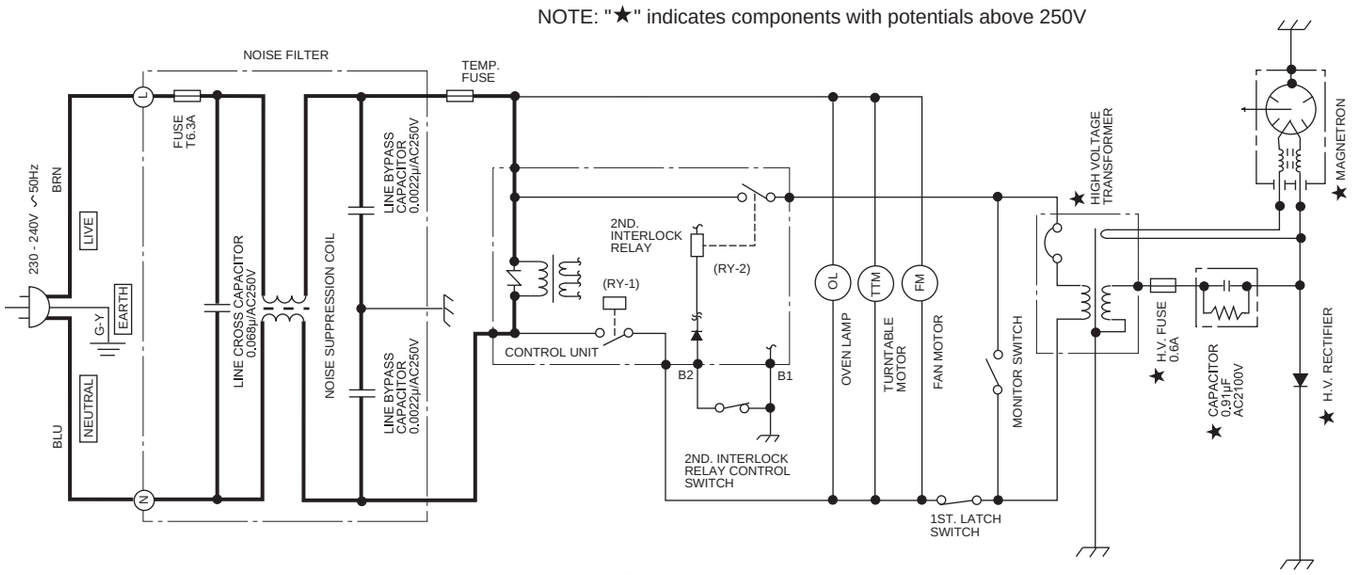

Figure O-1 Oven Schematic-OFF Condition

SCHEMATIC
NOTE: CONDITION OF OVEN
1. DOOR CLOSED.
2. COOKING TIME PROGRAMMED.
3. START BUTTON PRESSED.

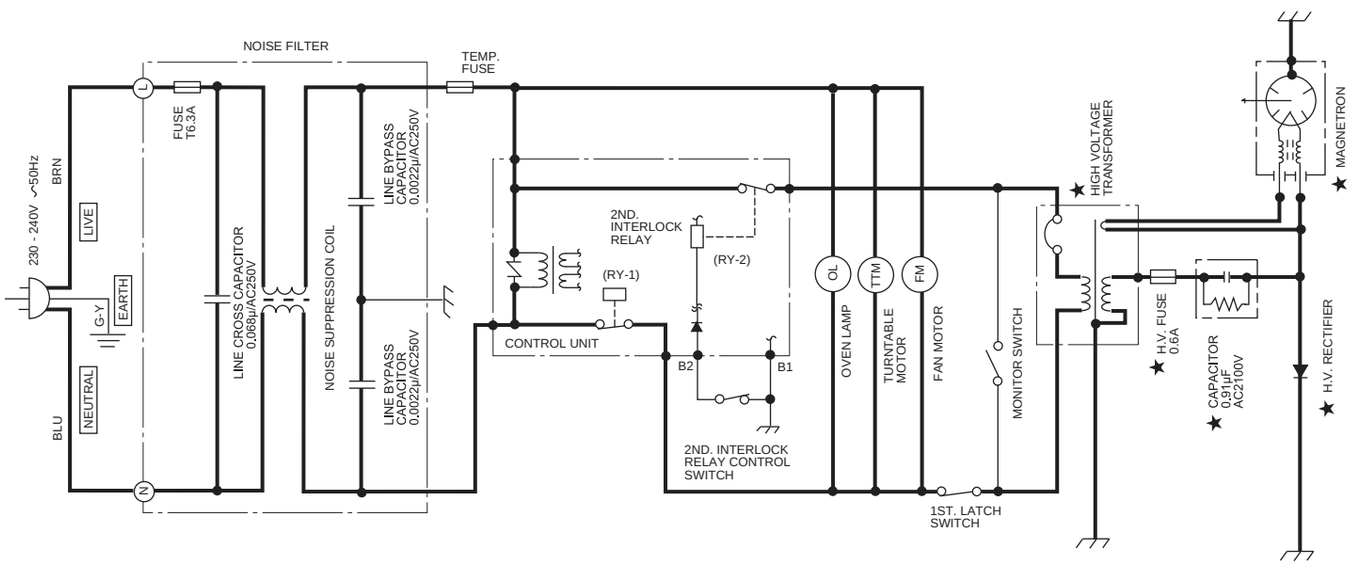

Figure O-1 Oven Schematic-ON Condition

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Pictorial Diagram

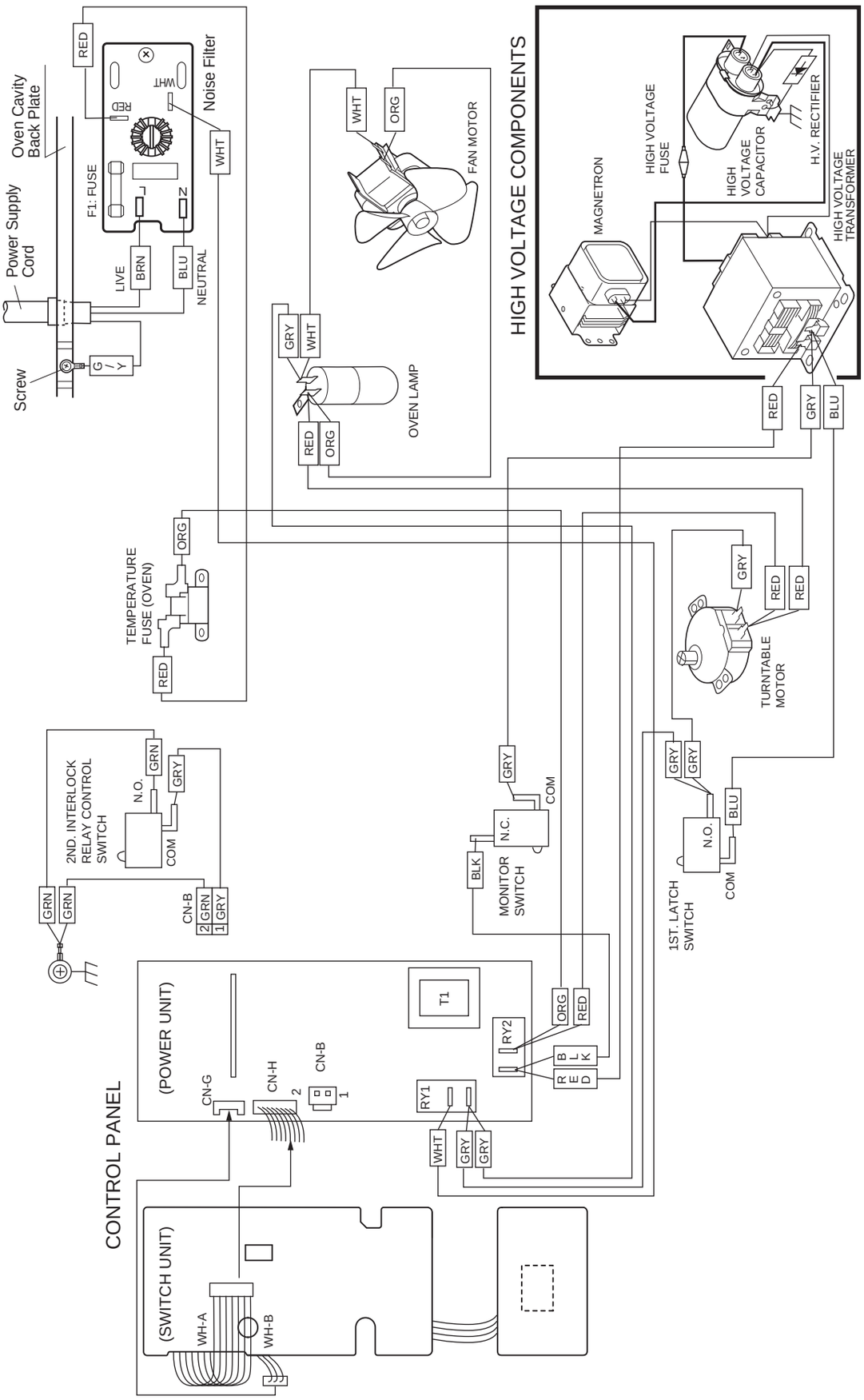

Figure S-1. Pictorial Diagram

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Control Unit Circuit

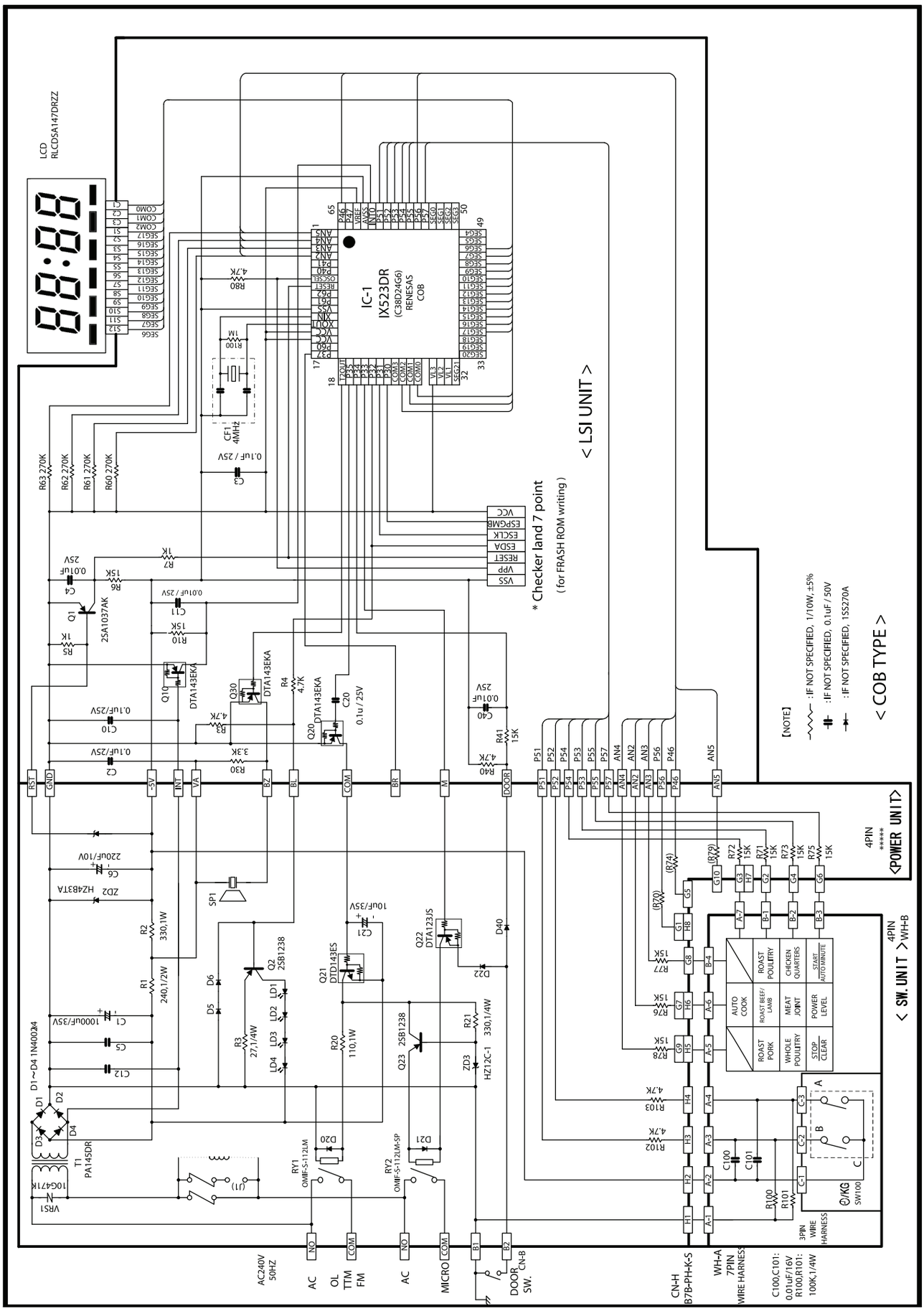

Figure S-2. Control Unit Circuit

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Printed Wiring Board

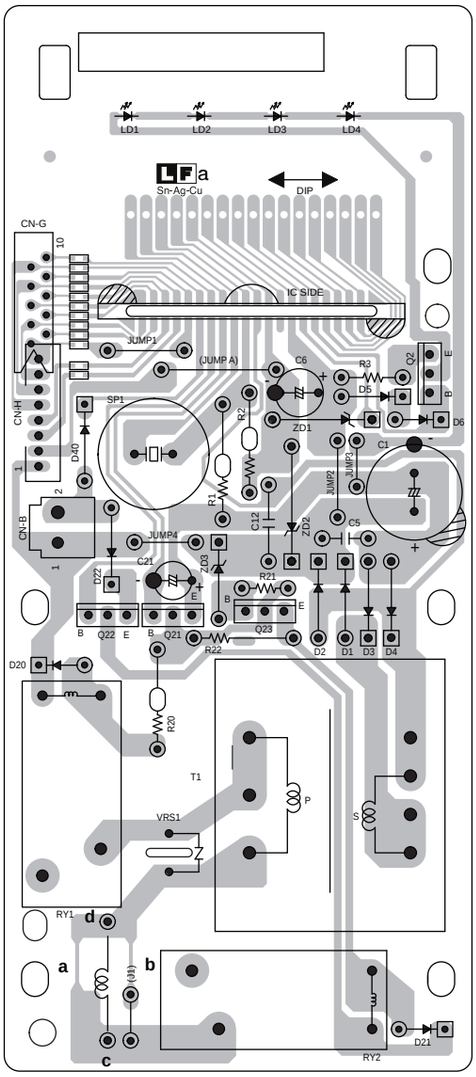

Figure S-3. Printed Wiring Board of Power Unit

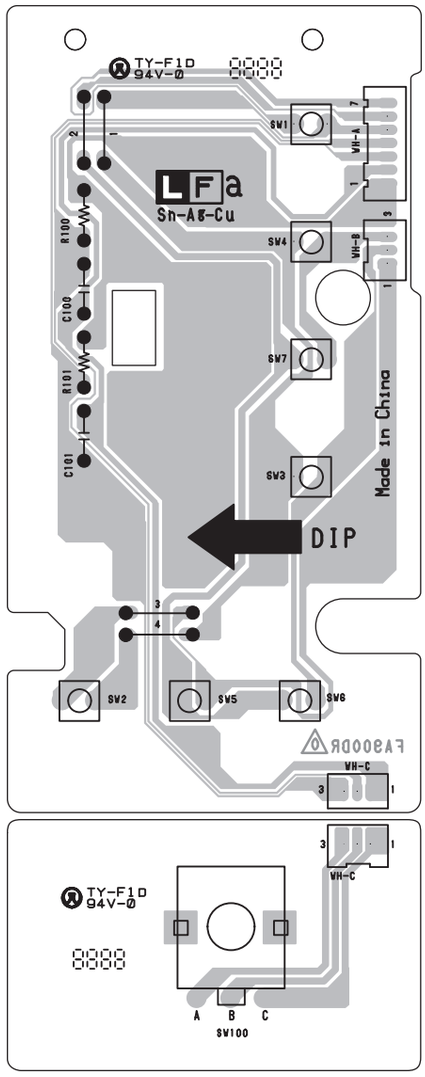

Figure S-4. Printed Wiring Board of Switchr Unit

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PARTS LIST

NOTE: Parts marked "*" may cause undue microwave exposure. Parts marked "Δ" are used in voltage more than 250V.

	REF. NO.	PARTS CODE	DESCRIPTION	Q'ty	PRICE RANK
			OVEN PARTS		
	ELECTRIC PARTS				
	1-1	QACC-A126WRZZ	Power supply cord	1	AT
	1-1	QACC-A088WRE0	Power supply cord (Interchangeable)	1	AW
Δ	1-2	FH-DZA115WRKZ	High voltage rectifier assembly	1	AR
	1-3	FPWBFA387WRKZ	Noise filter	1	AW
Δ	1-4	RC-QZA218WRE0	High voltage capacitor	1	AW
Δ	1-4	RC-QZA295WRZZ	High voltage capacitor (Interchangeable)	1	AV
Δ	1-4	RC-QZA333WRZZ	High voltage capacitor (Interchangeable) for production use	1	--
	1-5	QFS-CA027WRZZ	Fuse T6.3A	1	AG
Δ	1-6	QFS-IA004WRE0	High voltage fuse 0.6A	1	AK
	1-7	RMOTEA405WRZZ	Fan motor	1	AX
	1-7	RMOTEA390WRE0	Fan motor (Interchangeable)	1	AW
*Δ	1-8	RV-MZA341WRZZ	Magnetron	1	BG
	1-9	RLMPTA088WRZZ	Oven lamp	1	AN
	1-9	RLMPTA083WRZZ	Oven lamp (Interchangeable)	1	AW
	1-10	QSW-MA085WRE0	1st. Latch switch / 2nd. interlock relay control switch	2	AF
	1-10	QSW-MA137WRE0	1st. Latch switch / 2nd. Interlock relay control switch (Interchangeable)	2	AH
	1-10	QSW-MA147WRE0	1st. Latch switch / 2nd. Interlock relay control switch (Interchangeable)	2	AM
	1-11	QSW-MA086WRE0	Monitor switch	1	AF
	1-11	QSW-MA138WRE0	Monitor switch (Interchangeable)	1	AH
	1-11	QSW-MA148WRE0	Monitor switch (Interchangeable)	1	AM
Δ	1-12	RTRN-A755WRZZ	High voltage transformer	1	BH
Δ	1-12	RTRN-A733WRZZ	High voltage transformer (Interchangeable)	1	BM
	1-13	QFS-TA014WRE0	Temperature fuse 150ºC (Oven)	1	AG
	1-14	RMOTDA265WRZZ	Turntable motor	1	AS
	1-14	RMOTDA173WRE0	Turntable motor (Interchangeable)	1	AX
	1-14	RMOTDA253WRZZ	Turntable motor (Interchangeable)	1	AV
	CABINET PARTS				
	2-1	GCABUA995WRPZ	Outer case cabinet	1	BE
	2-2	GDAI-A377WRWZ	Bottom plate	1	AS
	2-3	GLEGPA104WREZ	Foot	2	AF
	OVEN PARTS				
*	4-1	PHOK-A146WRFZ	Latch hook	1	AG
	4-2	LBNDKA168WRPZ	Capacitor holder	1	AD
	4-3	NFANJA053WRFZ	Fan blade	1	AG
	4-4	PDUC-A908WRWZ	Fan duct	1	AR
*	4-5	FOVN-A570WRTZ	Oven cavity	1	BG
	4-6	LANGFA267WRPZ	Chassis support	1	AH
	4-7	PSPAJA007WRFZ	Spacer	1	AF
	4-8	PCOVPA419WREZ	Waveguide cover	1	AG
	4-9	PDUC-A909WRPZ	Air duct	1	AN
	4-10	PPACGA084WRF0	TTM packing	1	AF
	4-11	PCUSUA501WRP0	Cushion	1	AB
	4-12	PCUSGA664WREZ	Cushion C	1	AF
	4-13	PCUSGA615WRPZ	Cushion	1	AE
	4-14	PCUSGA661WREZ	Cushion A	1	AD
	4-15	PCUSUA278WRP0	Cushion	1	AB
	4-16	PCUSUA647WRPZ	Cushion	1	AC

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REF. NO.	PARTS CODE	DESCRIPTION	Q'ty	PRICE RANK
MISCELLANEOUS				
6-1	NTNT-A034WRF0	Turntable	1	AM
6-2	FROLPA113WRKZ	Turntable support	1	AS
SCREWS, NUTS AND WASHERS				
7-1	XHPS740P08K00	Screw : 4mm x 8mm	5	AB
7-2	XETS740P10000	Screw : 4mm x 10mm	1	AA
7-3	XHPS740P08000	Screw : 4mm x 8mm	4	AB
7-4	LX-CZ0052WRE0	Special screw	2	AA
7-6	LX-CZA073WRE0	Special screw	3	AC
7-7	XHTS740P08RV0	Screw : 4mm x 8mm	4	AG
7-8	XOTS740P08000	Screw : 4mm x 8mm	16	AA
7-9	XOTS740P12RV0	Screw : 4mm x 12mm	4	AD
7-10	XOTS740P12000	Screw : 4mm x 12mm	1	AA

DOOR AND CONTROL PANEL PARTS

CONTROL PANEL PARTS					
	3-1	DPWB-A674DRKZ	Control unit	1	BQ
	3-2	DPWB-A673DRKZ	Switch unit	1	BF
	3-3	GMADIA152WRRZ	Display window	1	AL
	3-4	HDECAA434WRRZ	C/P decoration	1	AN
	3-5	HPNLCC201WRTZ	Control panel	1	AU
	3-6	JBTN-B515WRTZ	Key button A	1	AH
	3-8	JKNBKA764WRTZ	Timer knob	1	AM
	3-9	PCUSUA173WRP0	Cushion	1	AC
	3-10	XEPS730P08XS0	Screw ; 3mm x 8mm	15	AB
	3-11	MSPRCA169WREZ	Earth spring	1	AC
DOOR PARTS					
*	5-1	FDORFA397WRTZ	Door panel assembly	1	BB
*	5-2	GWAKPB248WRTZ	Door frame	1	AY
	5-3	HDECQA392WRRZ	Door decoration A	1	AN
	5-4	HDECQA393WRPZ	Door decoration B	1	AH
	5-5	JHNDMA063WRTZ	Door handle	1	AQ
*	5-6	LSTPPA211WRFZ	Latch head	1	AG
	5-7	LSTPPA291WRFZ	Glass stopper	1	AH
	5-8	MSPRTA187WRE0	Spring	1	AC
	5-9	PGLSPA754WREZ	Door glass	1	AR
	5-10	PSHEPA782WREZ	Sealer fil	1	AG
*	5-11	GCOVHA424WRFZ	Choke cover	1	AK
	5-12	LX-CZA106WREZ	Screw : 3mm x 10mm	2	AC
	5-13	HDECQA391WRFZ	Door sash	1	AG
	5-14	XEBS730P06000	Screw ; 3mm x 6mm	11	AC
MISCELLANEOUS					
	6-4	TINSEB176WRRZ	Instruction book	1	AM
	6-5	FW-VZC056WREZ	Main wire harness	1	AQ
	6-6	FW-VZC095WREZ	Switch harness	1	AN

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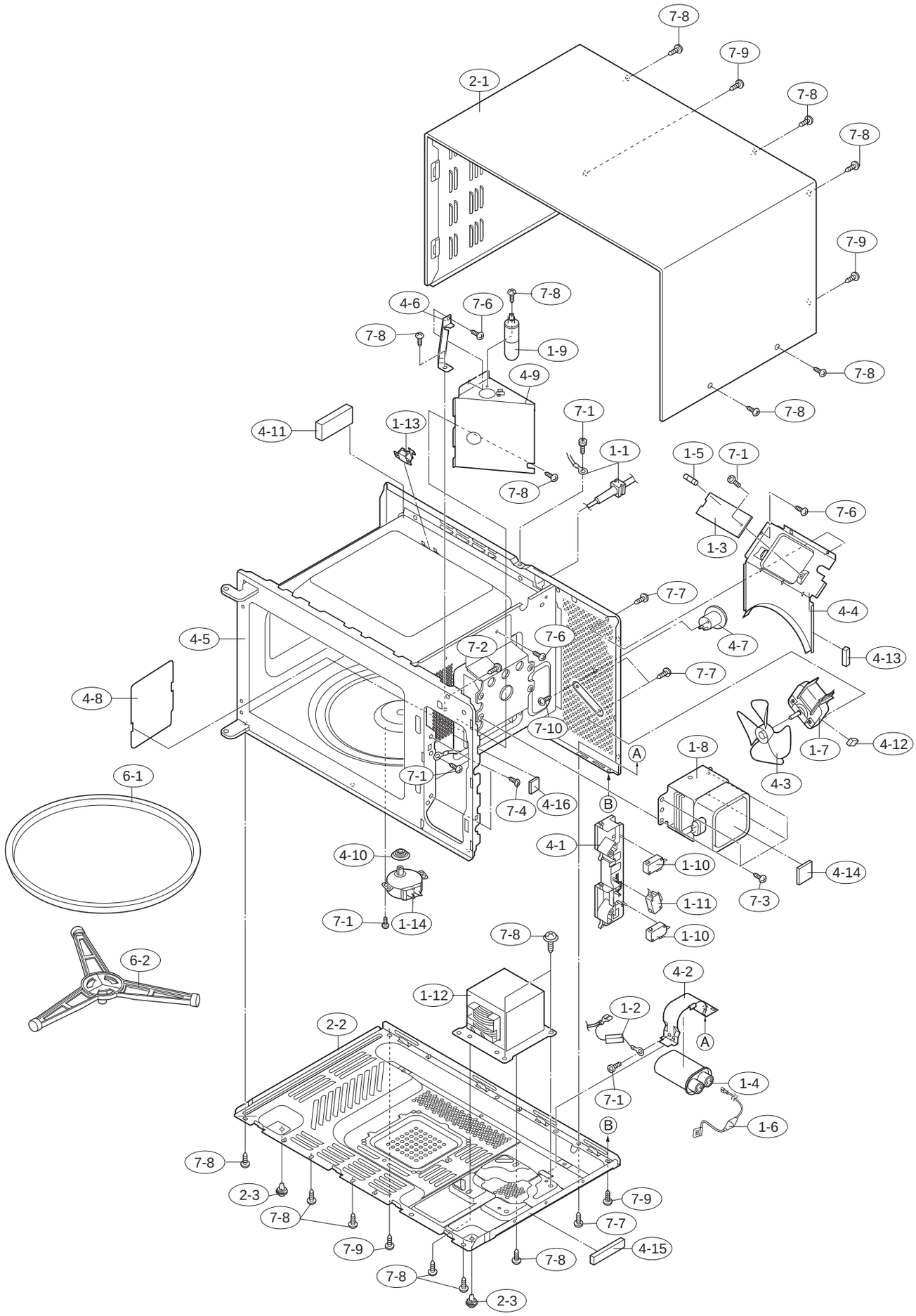
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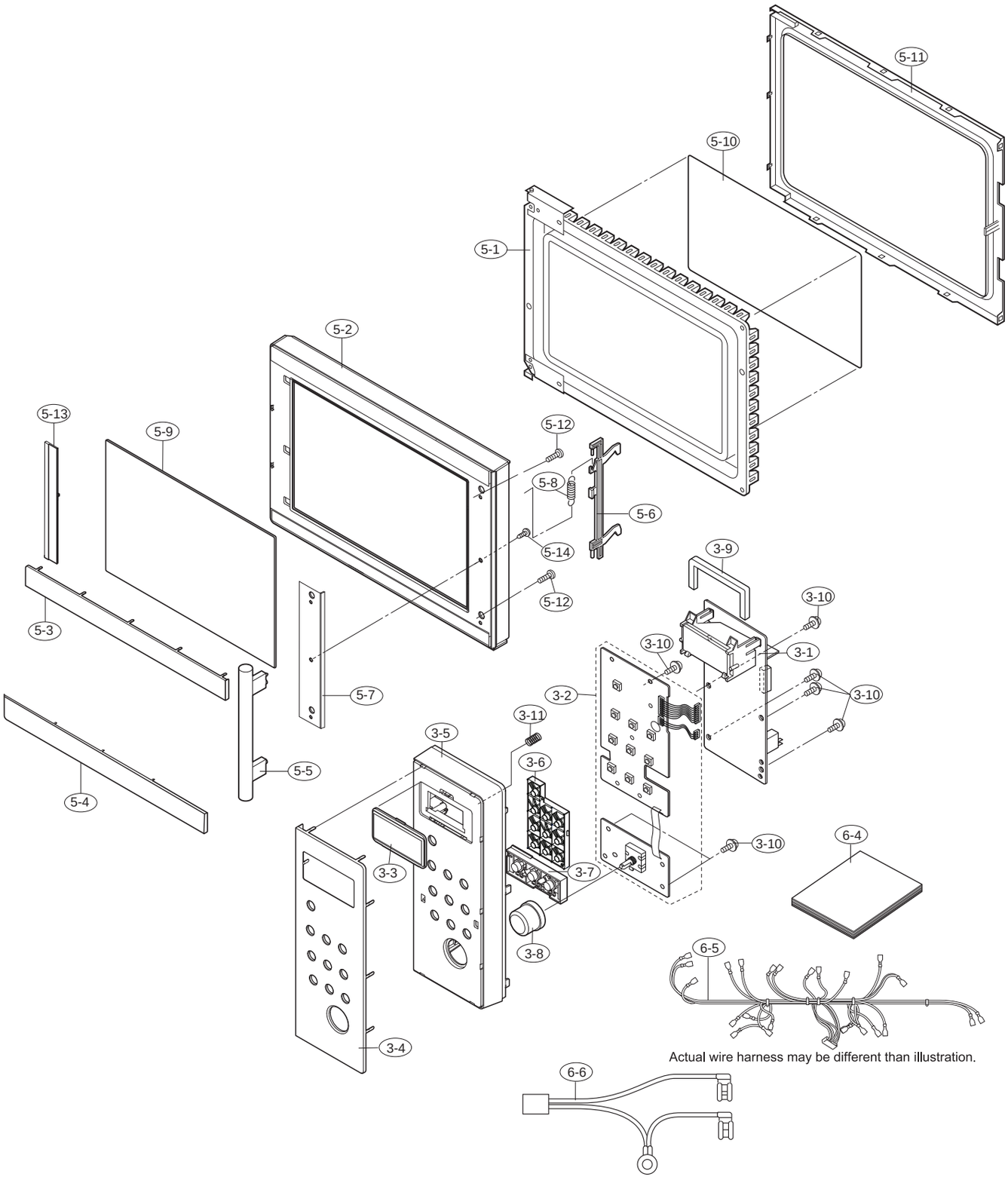

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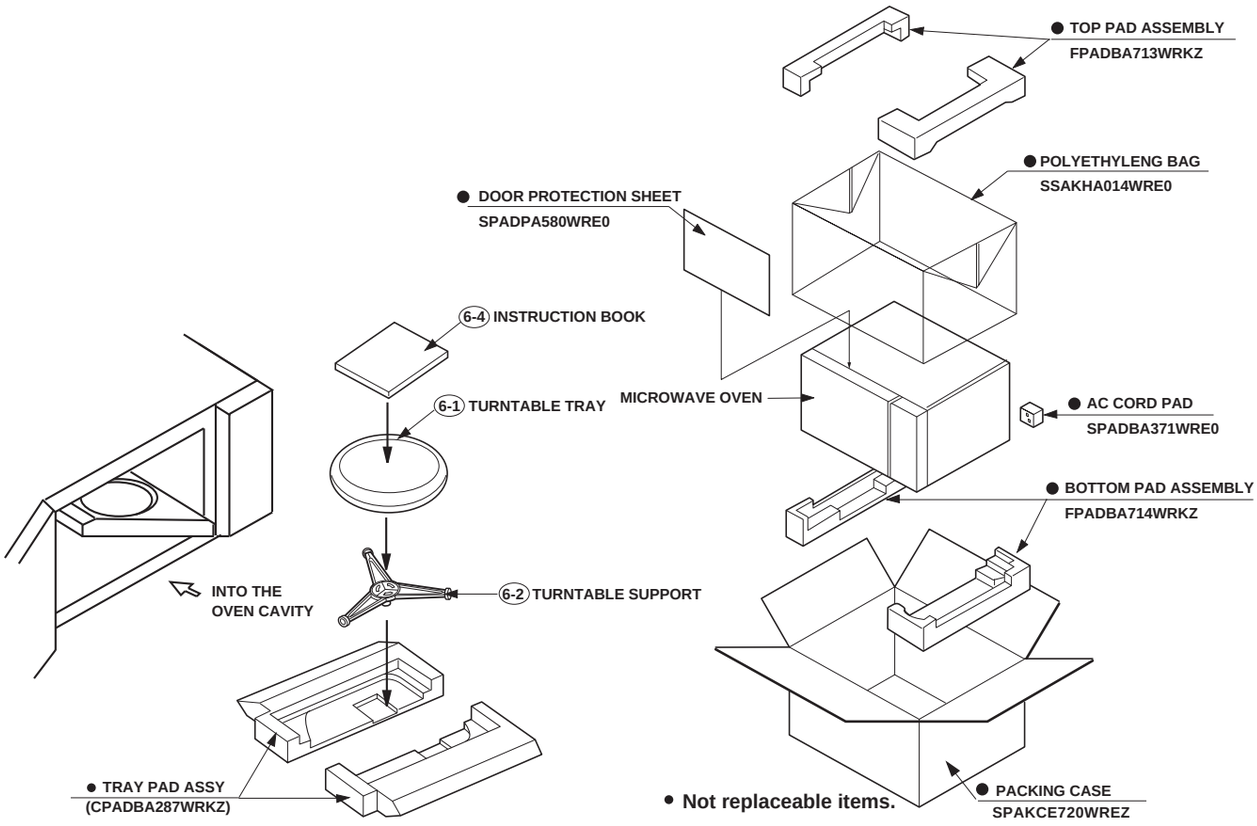

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